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Education Information System

in the Face of the COVID-19 Pandemic

SUMMARY · As a result of the health crisis brought on by the COVID-19 pandemic, most of the world's governments chose to temporarily suspend in-person classes. To provide continuity to the learning process, the region's countries launched plans and programs that at first aimed to implement remote learning strategies and, later, to plan the return to in-person classes. This planning has increased demand for educational information in quantity, frequency and depth. Educational information systems have been forced to produce new data while meeting the traditional information needs within this unprecedented context. This document looks to present some keys to understanding how educational information systems responded to the needs imposed by the pandemic.

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Introduction¹

As a result of the health crisis brought on by the COVID-19 pandemic, most governments chose to temporarily suspend in-person classes in schools and other educational institutions. In the case of Latin American and Caribbean countries, this suspension began during the second week of March 2020, estimated to have affected more than 165 million students.²

The massive closure of schools forced national and sub-national governments to react quickly to ensure continuity in the learning process, setting in motion plans and programs for remote learning strategies and to ensure the conditions for those strategies to effectively reach as many students as possible. Afterwards, the education systems began to work on the return to in-person classes, which implied new planning challenges.

This process increased the demand for education information in quantity, frequency and depth in order to answer the questions that arose: How many schools are closed? Do the students have computers and connectivity? Are the teachers prepared to maintain online classes? How much are students learning? When to return to in-person classes?

Although all Latin American and Caribbean countries have some type of education management information system (EMIS), they were unprepared to face the new requirements.³ During 2020 and 2021, countries have had to find solutions to answer these questions, adapting their information systems to the pandemic-driven conditions.

For example, 62% of Latin American and Caribbean countries were forced to postpone the collection of educational data due to the difficulties arising from this context, while 58% implemented new data collection methods (34% via online surveys), and 54% required an increase in the frequency of information gathering to monitor some variables on a more regular basis.⁴ The results from a recent survey by the Latin American Laboratory for the Evaluation of Educational Quality (LLECE) indicate that several countries suspended all of their standardized evaluations of learning achievements that they had planned in 2020, and others postponed them. For 2021, half of the countries that plan to implement an assessment have adapted the tests for use as a diagnostic in response to the crisis.⁵

This document reviews some of the tensions, dilemmas and challenges that EMIS have faced during their adaptation to the health crisis caused by the COVID-19 pandemic, both in the framework of the suspension of in-person education, and in the planning of the return to classes. These tensions, dilemmas and challenges can be grouped into three areas: i) the new types of information required in the context

¹ This document is based on the “Information systems” section of the document [UNESCO/OREALC Santiago and IDB. 2020. *Reopening Schools in Latin America and the Caribbean: Key Points, Challenges, and Dilemmas to Plan a Safe Return to In-person Classes*. Santiago, UNESCO- Inter-American Development Bank.](#)

² [ECLAC-UNESCO. 2020. *Education in the times of COVID-19*. Santiago, ECLAC-UNESCO.](#)

³ EMIS can be defined as the ensemble of operational processes, increasingly supported by digital technology, that enable the collection, aggregation, analysis, and use of data and information in education, including for management and administration, planning, policy formulation, and monitoring and evaluation. [UNESCO. 2018. *Re-orienting Education Management Information Systems \(EMIS\) towards inclusive and equitable quality education and lifelong learning*. Paris, UNESCO. \(Working Papers on Education Policy, 5\).](#)

⁴ These estimates result from processes carried out from the Survey of COVID-19 Pandemic Impacts on National Education Planning Units, implemented by the UNESCO Institute for Statistics in 2020. For more information, see <http://covid19.uis.unesco.org/covid-planning-units/>.

⁵ [UNESCO/OREALC. 2021. *A un año del comienzo de la pandemia: Continuidad educativa y evaluación en América Latina y el Caribe en 2021*. Santiago, UNESCO.](#)

of the crisis, ii) the need to integrate information sources from different sectors, and iii) the generation of timely information to be able to quickly respond to changing scenarios.⁶

New information requirements ... new information?

The current emergency has made datasets, indicators or key dimensions a priority for the diagnosis that were not considered in the EMIS, or not in the required manner. This problem has at least three considerations: a) there is historically generated data that is not valid for this context; b) there are new data needs that EMIS did not gather before the pandemic; and c) there is information that was historically captured with low quality, which in this context takes on a key role.

Regarding the first consideration, the definitions and categories that support the measurement of educational phenomena have been disrupted. Traditional datasets and indicators are no longer valid as the underlying concepts to those definitions do not apply in this new scenario: What is understood as *coverage* when remote learning is analyzed? How is it measured if a boy or girl is *educated* within a framework of asynchronous classes? What does the concept of *student* represent in this context? What is understood by *educational dropout* or *disengagement*?

Learning assessments are also placed under stress. The remote format presents unfavorable conditions for the development of country-scale evaluation operations, and makes it necessary to reformulate the evaluation dimensions. In addition, certain elements affect the curricular reference frameworks, due not only to the fact that the vast majority of countries have reduced or concentrated teaching content, but also because that teaching has been mainly developed remote or hybrid.⁷

Second, there are new requirements for information to represent how educational practices are implemented. To respond to this, EMIS are forced to innovate, and to do so quickly. For example, to monitor the students' educational engagement, what is understood by remote or hybrid learning, what is its scope, and how to represent those definitions in numbers must be defined.

The multiplicity of remote learning formats, in many cases implemented simultaneously in a country, meant that information was needed to be able to identify those students who were not accessing these arrangements, or those who, even if they were able to access the systems, showed signs of disengagement due to the inability to maintain continuity or have regular contact with teachers.

Third, the planned return to in-person classes required updated, accurate information from the EMIS with quality requirements greater than that offered. For example, data on school infrastructure and sanitation took on unprecedented importance, but in most cases this information is reported by the authorities of each school and contains biases, mainly due to the existence of subjective criteria in data recording.

⁶ The areas proposed here do not constitute an exhaustive evaluation of the multiple challenges that EMISs have had in responding to the crisis. For example, a recent UNESCO document identifies four dimensions to these challenges: 1) opportunity, 2) relevance and completeness, 3) accessibility and use, and 4) interoperability and adaptability. UNESCO. 2021. *Re-imagining the future of Education Management Information Systems*. Paris, UNESCO.

⁷ UNESCO/OREALC. 2021. *A un año del comienzo de la pandemia: continuidad educativa y evaluación en América Latina y el Caribe en 2021*. Santiago, UNESCO.

Integration of sources to expand the scope

Existing literature on EMIS tends to emphasize that these systems produce varied datasets covering different educational dimensions that combine information generated in different departments of the Ministry of Education, as well as information generated outside of this scope.⁸

However, in practice this integration is infrequent. The region's educational systems have historically tended to be developed in a silo structure, with each department generating its own management tools. This results in fragmented information systems in which multiple digital platforms coexist.⁹ Although there are cases where EMIS have been linked with other information systems, such as those of the health sector or public transport,¹⁰ the scope and the coverage of certain levels or modalities may be limited.¹¹

The emergence of COVID-19 gave rise to the need to strengthen this integration, to relate the EMIS with new data that usually comes from outside the education sector. For the period in which remote education has been prioritized, characterizing areas such as connectivity, the availability of computers at homes or family participation in social protection programs has been key.

As students return to in-person classes, new needs have arisen, mainly linked to the monitoring of epidemiological indicators to make decisions regarding the opening and closing of schools. As such, information sources from statistical institutes, social protection and/or health areas, among others, have become relevant and need to be articulated and collated with educational information to design better sector responses.

Timeliness of Information

For most education systems in the region, a particular requirement in the context of the COVID-19 pandemic was to plan within a scenario of uncertainty.¹² In this context of emergency, the epidemiological situation has been changing, and the future scenario forecast is uncertain, even when projecting just a few months in advance. In this context, the demand for information has forced the cycles between production and availability to be reduced: a previously tolerable lag can now make information obsolete.

⁸ Three phases of EMIS development can be identified: 1) accountability and compliance; 2) instruction and management; and 3) intelligent and integrated. In the last phase, the EMIS is expected to cover all educational levels (beyond primary education) and incorporate external information. Abdul-Hamid, H., Saraogi, N. y Mintz, S. 2017. *Lessons Learned from World Bank Education Management Information System Operations. Portfolio Review, 1998–2014*. Washington, DC, World Bank (World Bank Studies).

⁹ Arias, E. et al. 2019. *From paper to the cloud. Guiding the digital transformation of Education Management and Information Systems (SIGEDs)*. Washington DC, Inter-American Development Bank, Education Division. (IDB Technical Note, 1660).

¹⁰ Inter-American Dialogue. 2021. *Technology for Good Education Management: Information Management Systems for Education*. Washington DC, Inter-American Dialogue Education Program.

¹¹ UIS. 2020. *Data innovation for producing SDG 4 indicators: a global analytical report*. Montreal, UNESCO Institute for Statistics. (Information document 65).

¹² UNESCO/OREALC Santiago and IDB. 2020. *Reopening Schools in Latin America and the Caribbean: Key Points, Challenges, and Dilemmas to Plan a Safe Return to In-person Classes*. Santiago, UNESCO- Inter-American Development Bank.

Historically, EMIS have had a natural lag due to the processes of collection, processing and dissemination of census information. Although technological advances in recent years have brought improvements and innovations in these processes, 42% of the countries in Latin America and the Caribbean still totally or partially use some type of physical format (such as paper forms) for data collection.¹³

This lag, added to the need for updated information to face the COVID-19 crisis and its direct effects on the education sector, has led to specific information gathering in some of the region's countries, generally of a sample nature and using new collection modalities such as telephone surveys.¹⁴

The tracking of schools reopening has also required information systems for real-time monitoring of the epidemiological situation to make decisions regarding the opening or closing of institutions. This is based on the behavior of infections, with geographical criteria, per educational institutions and even at the classroom and grade level.

A key point is to establish to what extent countries have been able to deploy these ad hoc data collections to systematize information that responds to the new needs, and to what extent these devices, created in an emergency situation, are able to integrate to the EMIS.

Conclusions and Questions

The extent and depth of the impacts of the COVID-19-induced emergency are not yet known, but one can envisage that education systems will require significant modifications in the medium and long term as a result. As such, the EMIS must be reconfigured to accompany this adaptation process.

There is little systematized information on how the EMIS have responded to this scenario, to what extent statistical offices have been able to respond to these demands, or if their efforts have focused on collecting traditional data and adapting it in the best possible way to a scenario where schools are closed.¹⁵

Three recommendations can be made regarding EMIS in the post-pandemic scenario:

- EMIS should focus on those dimensions of the education system that have had the greatest impact during the crisis.¹⁶ However, these dimensions must be addressed considering

¹³ UIS. 2020. *Data innovation for producing SDG 4 indicators: a global analytical report*. Montreal, UNESCO Institute for Statistics. (Information document 65).

¹⁴ There are several instances in the region of countries that have performed telephone surveys to obtain detailed information on households' educational situation in the context of the COVID-19 health emergency. This has been a key tool in filling vacancies or shortcomings in the timeliness of information, although there are some challenges mainly related to the representativeness of the sample and the characteristics of the instrument that should be considered. See Tanner. 2021. *Pitfalls and Potential of High-frequency Telephone Surveys during COVID-19*. *Forced Migration Magazine*, No. 66, March 2021. Alicante, Interuniversity Institute for Social Development and Peace of Universidad de Alicante. p. 51-53.

¹⁵ At the beginning of the year, the UNESCO Institute for Statistics carried out the Survey to Monitoring Impact on Main Education Data Aggregates (MIMEA), which reviews the pandemic's impact on educational data generation, but whose results have not yet been released. This information may shed more light on answering questions about how the EMISs have responded to this scenario. For more information, see <http://covid19.uis.unesco.org/covid-planning-units/>.

¹⁶ In its analysis of the educational data to be collected in the framework of COVID-19, the UNESCO Institute for Statistics emphasizes equity in access and learning. It proposes that measuring and communicating learning should be a key component in the post-COVID strategy, particularly constant monitoring and evaluation of student

the construction of a comprehensive view. There is a risk that information developments disproportionately prioritize dimensions that are critical in this context, but with little future value, and neglect those that have become less relevant but may be central in the coming years.

- Greater efforts will be needed to coordinate information systems and databases to obtain a more comprehensive diagnosis of the population's overall situation and the educational system in particular, to better respond to situations such as those experienced during the emergency. Associating information from the educational, health and social protection systems will be key to design crises response plans and to better define public policies in social spheres.
- Finally, lessons can be learned from this experience for EMIS to improve the timeliness of information and to advance to permanent monitoring schemes. This may call for some diagnostic information collection modalities to be perfected and institutionalized in order to form part of the EMIS.¹⁷ In the same light, an additional effort is expected so as to increase the use of technologies that make the information gathering and analysis process more efficient.¹⁸

performance. UIS. 2020. *The Need to Collect Essential Education Data During the COVID-19 Crisis. Fact Sheet no. 58.* Montreal, UNESCO Institute for Statistics (Informative file No. 58).

17 In a crisis context, data and indicators for non-traditional objectives (for example, how many schools have contingency plans) may require special surveys that must be integrated into EMISs. IIEP. 2015. *Monitoring and evaluation: How will we know what we have done? Booklet 6 of Safety, Resilience, and Social Cohesion: A Guide for Education Sector Planners (IIEP).* Paris, International Institute for Educational Planning.

18 In Latin America and the Caribbean, 80% of the countries register student data in the EMISs through an individual registry, which enables interesting innovations in the processing and analysis of information. UIS. 2020. *Data innovation for producing SDG 4 indicators: a global analytical report.* Montreal, UNESCO Institute for Statistics. (Information document 65).

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